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SUBJECT: FRANCE: POTENTIAL FOR SHALE GAS DEVELOPMENT

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SENSITIVE BUT UNCLASSIFIED

¶1. (SBU) Summary: France has no identified shale gas bearing formations. Industry took an interest in the sector in 2007, but although the GOF plans to permit exploration activity for shale gas areas in Southeastern France in 2010 (making production possible around 2015), technical, legal and political challenges are significant. Shale gas is not a strategic energy priority for France, given a diversified set of natural gas/LNG suppliers and a large amount of nuclear generated electricity. End Summary.

¶2. (SBU) EconOff met recently with GOF officials and industry representatives in the energy sector who gave an overview of current policies, activities, and future challenges regarding shale gas development in France.

Energy Mix: No Urgency for Shale Gas

¶3. (U) Our contacts suggest no immediate push to develop France's shale gas market. Imported gas accounts for 15 percent of France's energy consumption. (The small amount of French commercial gas production - 1.1 billion cubic meters per year - will end in 2013.) The GOF aims at keeping a diversified set of suppliers: Norway (33 percent), The Netherlands (18 percent), Algeria (17 percent) and Russia (15 percent) including substantial liquefied natural gas imports. Gas in France is used for heating and industry with a small percentage for electricity production (4 percent of electricity comes from gas compared to the EU average of 7 percent). The country's 58 nuclear power plants generate nearly 80 percent of the country's electricity. Potential remains for expanding gas utilization in the power/transportation sectors given planned production for electric vehicles.

No Shale Gas-Bearing Formations

¶4. (U) France has no identified shale gas bearing formations so far. Shale gas experimental labs do not exist, nor is there record of horizontal drilling or hydraulic fracturing activities, according to sources at the Ministry of Sustainable Development (MEEDDM). The GOF Investment Plan for Gas Development 2009-2020 makes no mention of shale gas related infrastructure projects. Industry's interest in shale gas development in France is recent (since 2007).

Potential in the Southeast Basin

¶5. (U) There is potential for shale gas development in Southeastern France, energy experts contend. The specific area spans roughly 450 miles, extending from the Jura Mountains near the Swiss border in the north, down through the Alps to the Languedoc and Provence

basins bordering the Mediterranean Sea. The area is in one of the three large sedimentary basins in France, called the "Southeast Basin" or "mega-basin," which is known for its structural complexity.

¶6. (SBU) Energy companies are currently applying for non-exclusive exploration permits for the Southeast Basin to research shale gas formations. European and American firms operate alone or form joint ventures with French companies. The largest players are Lundin (Swedish), Vermilion Rep SAS (Canadian), Schuepbach Energy LLC (Swiss), Treador Energy (U.S.) and Total Exploration and Production, in partnership with Devon Energy (U.S.). Other applicants include Mouvoil SA, Bridgeoil, Diamoco Energy, Egdon Resources Ltd, Eagle Energy Ltd, YCI Resources Ltd, and Cevennes Petroleum Development Ltd. MEEDDM's Directorate on Energy and Climate, Bureau of Exploration and Production of Hydrocarbons (BEPH) publishes monthly updates and company information on permit applications www.energie.developpement-durable.gouv.fr.

Challenges for Gas-Shale Development

¶7. (SBU) Embassy contacts raised several challenges for shale-gas development:

-- Geological make-up. France has one of the highest levels of CO2 gas deposits in the world. CO2 fields within the Southeast sedimentary basin lie along fault systems (fissures in the rock). Some CO2 fields are trapped by an overlying impermeable cap rock, others have CO2 emissions cropping out at the surface or leak into the ground water and emerge in carbonated springs. Shale gas expert Francois Lorant stressed the unknown risks for hitting new CO2 deposits when drilling for shale gas exploration, and the potential hazard on the local environment.

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-- Social acceptability. Communities fear the impact of intense drilling, well density, and high-volume hydraulic fracturing. Our contacts underscore the absence of a thorough risk assessment on possible environmental consequences (wildlife, traffic, noise, urban settings).

-- Water and chemicals. Large volumes of water are required to fracture the rocks. Regional authorities want evidence that shale gas development will not harm the environment and be an appropriate use of limited natural resources. Communities, water regulatory agencies, energy experts, and industry leaders raise the risk of groundwater contamination by the fracture fluid which contains chemical additives. The consensus is that further research is necessary.

-- Population density. The Southeast Basin covers several important urban and sports centers, wine and sparkling mineral water businesses (Perrier, Badoit), quaint villages and other scenic and tourist zones. The demographics will make it difficult to access shale gas formations given the need for wide-spread drilling (approximately six wells every kilometer/four per mile), French experts estimate.

-- Drilling and hydraulic fracturing technologies. The GOF and French industry do not have expertise in drilling and new fracturing technologies required for developing shale gas resources.

-- Drilling Rigs. French companies build and export rigs internationally. IFP Director Appert told us these companies do not have the capacity to cover domestic demand for shale gas production. French rig suppliers would likely call on Spanish and German rig imports. All things being equal, MEEDDM officials anticipate a shortage of rigs in France in the next three to five years if shale gas production moves forward.

-- Mining rights. There is no private ownership of mineral rights in France. A gas field does not belong to the land owner, and only the state (MEEDDM) may grant exploration and production rights for such resources.

-- Geological data. France lacks a systemic assessment of shale gas resources and data on the source rock from which shale gas originates. Seismic data and well site reports are considered "interpreted data" and remain confidential indefinitely and the property of the companies. Other seismic data ("raw data") is public after a ten-year confidentiality period. Some seismic sections (basin imagery) can be viewed (after ten years) on a case by case basis. BEPH also maintains non-confidential data which is immediately accessible. Information on existing gas wells in the Southeastern basin may be useful for shale gas exploration. The material includes well reports, logs, cuttings/samples, test records, and surveys conducted before 1958 when the BEPH was created. BEPH's website also posts national indicators on mining acreage in France, geophysical and drilling activity, oil/gas production levels and reserves. Institut francais du petrole publishes regional studies on the prospects of France's sedimentary basins.

Regulatory Environment

¶8. (U) The French Mining Code is the main legislative instrument for regulating gas exploration, development, and production activities. Potential investors in shale gas development follow the same three-stage process as those for conventional gas development: research permit, exploration activity, and production. Each phase requires local and regional authorizations and a national permit. The respective local and regional authorities are the Prefect and the Regional Director for Industry, Research and the Environment (DRIRE). MEEDDM is the national level authority.

¶9. (U) MEEDDM accepts research permit applications at any time, if the area is unencumbered by existing exploration permits or concessions. France's General Council of Mines (GCM) provides a technical opinion on each application. The first application received for a given area sets off the competition process. European companies (see para. 12) may file a competing application within 90 days after the publication of the initial application in the French Official Journal and European Official Journal. MEEDDM is now assessing competing proposals submitted in 2007. Awards are expected in 2010. BEPH/MEEDDM can assist companies with the research permit application.

¶10. (U) In the second phase, MEEDDM grants a company(ies) exclusive mining rights for an initial five years to explore the hydrocarbons within the confines of the research permit. Holders of the exclusive research permit do not have the right to produce, but it is a prerequisite to do so. The exploration period can be extended twice for a period of five years each. Extensions require

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consultations with local authorities and a favorable GCM opinion. This generally takes one year. After the first extension, the permit area is reduced by fifty percent, and by an additional twenty-five percent at the second renewal. In an effort to cut costs (seismic surveys, drilling, etc.), permit holders may grant an interest in the area to another company via a partnership arrangement (farm-in).

¶11. (U) Investors should be prepared for a lengthy consultation period to obtain departmental and local authorizations. The DRIRE conducts environmental impact studies and establishes a dialogue with the community stakeholders. It studies the company's environmental and financial management practices in light of specific local factors: geology, hydrology, climate, demographics, local economy, living conditions, and the overall environmental footprint. The local prefect authorizes and will oversee the entire realm of operations: drilling, production, operations, management, waste disposal, departure plans, and well plugging.

¶12. (U) The production phase could begin as early as 2015 for shale gas research permits granted in 2010. The license holder must be a company governed by French or EU law. (Non-EU companies can establish a French/EU subsidiary or company, or enter into a JV.) If a commercially-viable discovery is made, only permit holders (not

partners) have an automatic and exclusive right to obtain a concession. The company must obtain a concession in the event of a commercially-viable discovery. Concession rights are generally granted for 25 to 50 years, and renewable several times for 25 years each. (Note: a partner can become a permit holder through a procedure called "mutation." A mutation requires a ministerial order -- no public enquiry, no local administrative consultation, except for a report by the DRIRE--, after consultation with the GCM. End note.)

Taxes and Fees

¶13. (U) Production license holders must pay the GOF a royalty based on production levels. For a new discovery, the rate is five percent for discoveries over 300 million cubic meters and is deducted from the business tax. There are also local mining taxes: 65.1 euros (USD 91) to the municipal authority for every 100,000 cubic meters of gas produced; 330.3 euros (USD 457) per 100,000 cubic meters for the administrative department. Surface rental fees do not apply, and wells recently brought on-stream are taxed at reduced rates.

French Views on Other Shale Gas Markets

¶14. (U) Jean-Marie Chevallier, of Cambridge Energy Research Associates, said most of the recent interest in shale gas development is by American companies and that market potential is strongest in the U.S., however, the "situation is not clear" in Europe. French energy experts agree there are likely opportunities for shale gas development in Poland, Hungary, and Germany. Ukraine is emerging as the largest potential shale gas market that could "drastically change the energy situation", MEEDDM Energy Advisor Richard Lavergne told us. It could be a major innovation that will change the European gas market by lowering prices, notably LNG. More LNG in Europe could lead to lower spot gas prices, which in turn could compete with nuclear electricity, he said. As for industry, GDF-Suez and Total SA are tight-lipped about their long-term international strategy in shale gas. CEO de Margerie told the press that Total's recent USD 2.25 billion investment in Chesapeake Energy's Barnett Shale project is a chance to gain experience in the sector before venturing in the French market and beyond. Total executives told us that for now, middle-sized companies seem suited for shale gas projects, providing expertise in local environmental conditions and specialized drilling techniques.

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